

Overexposure of UV Light to Cured Resins

The effect of underexposure is obvious... incomplete cure. The effects of overexposure are more complex. Double and triple exposures (two to three times the dosage required to cure) typically have little effect on light-curable materials. However, significant overexposure to UV light with attendant heat may age Dymax materials and some substrates (especially plastics). Severe aging may appear as cracking, physical distortion, changes in color, or chalking. Some physical properties such as an increase in hardness or decrease in elongation may also change. The degree of aging will depend upon several factors including intensity of the lamp, the wavelengths transmitted to the resin, temperature, exposure time, substrates, and specific formulations.

Aging from UV light is not the only concern associated with extra long exposures. Parts may get hot under UV lamps with extended exposures. Thermal aging can exhibit the same effects as UV aging. Some types of plastics may warp, scorch, or decompose from excessive heat absorption. A fan in the curing area may help keep parts cooler.

Significant overexposure of a resin to UV-curing light is unlikely to occur in a properly controlled curing process. End users should always test and validate their assembled device at the upper and lower limits of their process against the lifetime use of their device.

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